

ABSTRACT OF THE DISCLOSURE

A method and apparatus for predicting the outcome of a branch instruction based on the branch history of preceding branch instructions. As a sequence of instructions passes through an instruction execution pipeline, a base branch instruction is chosen, a history index is generated for the base branch instruction and subsequent branch instructions, and a transform is created for the branch instruction to be predicted. The transform is then saved. When the sequence of instructions subsequently passes through the pipeline again, the transform is retrieved and used to operate on the history index of the base branch instruction to produce a history index for the branch to be predicted. The result is used as an index into a prediction array to access the prediction logic for the branch instruction being predicted. By using the predetermined transform, a branch status prediction can be made before the branch to be predicted reaches the normal prediction stage in the pipeline. This allows the subsequent instructions to be predicted and loaded into the pipeline immediately behind the branch that was predicted. This process can also be applied to any application in which the historic results of previous elements are used to predict the result or identity of a current element, but the recent status of those previous elements is not available.